



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,743	12/09/2003	Stephen H. Li	TI-36014	5121
23494 7590 03/19/2008 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265				
EXAMINER HUYNH, KIM T				
ART UNIT 2111		PAPER NUMBER		
NOTIFICATION DATE 03/19/2008		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

uspto@dlmail.itg.ti.com

Office Action Summary

Application No.

10/731,743

Applicant(s)

LI ET AL.

Examiner

KIM T. HUYNH

Art Unit

2111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12 and 15-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION***Receipt Acknowledgement***

1. Receipt is acknowledged of the request filed on 22nd of February 2008 for a request for continued examination (RCE) under 37 CFR 1.114 based on the application No. 10/731,743, which the request is acceptable and an RCE has been established. Currently, claims 12, 15-21 are pending in this application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12, 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. (US Patent 6,760,793) in view of Chen et al. (Pub. No. US2003/0093629)

As per claim 12, Kelly discloses an arbitration circuit for an output port, comprising:

- a FIFO queue(fig.8, 831 ie input buffer) containing a head pointer (col.4, lines 50-67) to stored in a common memory for a plurality of ports and a plurality of characterizing data for each packet received at an input port(col.8, lines 40-65), wherein a data portion of the packet is stored only in the common memory (col.9, lines 35-64, col.4, lines 50-65 ie output buffer also common memory which

included the selected packets which included data portion and head pointer for each transaction)the queue forming a look-up table to determine which data will be sent out from the output port; (col.9, lines 1-21)

- a plurality of arbitration circuits coupled to the look-up table for selecting the next packet to be sent out corresponding to a preselected characterizing datum (col.9, lines 1-48 ie arbiter selects packets via switch to output buffer sets wherein buffer sets implies table) wherein the head pointer of the selected packet is utilized to select the packet from a common memory for the plurality of arbitration circuits wherein duplication of memory at the plurality of ports is eliminated. [(col.4, lines 50-65, ie a packet contain information transferring which allows differentiation of transactions from different devices) , (col.9, lines 35-48,), (col.10, lines 27-49, ie table 104 provided by the three buffer sets which provide transaction ordering)]

Kelly discloses all the limitations as the above but do not explicitly disclose a FIFO queue(fig.8, 831 ie input buffer) containing a head pointer to stored in a common memory for a plurality of ports. However, Chen discloses the buffer controller manages the buffer memory by integrating a plurality of bit mask bits and a linked list pointer to enhance the performance of the controller for buffer management. (paragraph 15-16) A pointer points to an address of the

linked list to manage the buffer memory so as to improve the operation efficiency and the cost of the hardware can be reduced greatly.

(paragraph 16) It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Chen's teaching into Kelly's system so as to provide a method for buffer management for improving the efficiency of buffer management and a controller thereof. (paragraph 5)

As per claim 15, Kelly discloses wherein the arbitration circuit is the arbitration circuit for one port of a PCI Express(revision 1.0a) switch (fig.8, 801). (col.9, lines 1-48)

As per claim 16, Kelly discloses wherein the common memory is shared by all ports in the PCI Express switch. (col.9,lines 1-48 ie I/O interconnect)

As per claim 17, Kelly discloses wherein the common memory is a crossbar memory. (col.9, lines 1-48 ie x-bar switch)

As per claim 18, Kelly discloses wherein the crossbar memory is a common port, virtual channel or type memory. (col.9, lines 35-48 ie virtual channel)

As per claim 19, Kelly discloses wherein the PCI Express(revision 1.0a) switch (fig.8, 801 ie switch) comprises:

- a plurality of ports; (fig.8, 863 ie I/O interconnect)
- a plurality of port controllers(fig.8, 859 ie interfaces), each controller being coupled to one of the ports;
- a local bus(fig.3, 311 ie internal bus) coupling the port controllers to a controller subsystem; and (col.4, lines 29-49)
- a single crossbar memory (fig.8, 833 ie x-bar switch) coupled to each of the port controllers and the controller subsystem, the crossbar memory serving as a common port or virtual channel memory for each of the port controllers. (col.9, lines 1-48)

As per claim 20, Kelly discloses wherein the crossbar memory is a common port, virtual channel or type memory. (col.9, lines 35-48 ie virtual channel)

As per claim 21, Kelly discloses wherein the crossbar memory is used as the replay memory by storing the head pointer in the port controller.(col.9, lines 1-48)

Response to Amendment

3. Applicant's amendment filed on 2/22/08 have been fully considered but does not place the application in condition for allowance.

a. With respect to claim 12, in response to applicant's argument that Kelly do not explicitly disclose a FIFO queue(fig.8, 831 ie input buffer) containing a head pointer to stored in a common memory for a plurality of ports. However, Chen discloses the buffer controller manages the buffer memory by integrating a plurality of bit mask bits and a linked list pointer to enhance the performance of the controller for buffer management. (paragraph 15-16) A pointer points to an address of the linked list to manage the buffer memory so as to improve the operation efficiency and the cost of the hardware can be reduced greatly. (paragraph 16) Thus, the prior art teaches the invention as claimed and the amended claims do not distinguish over the prior art as applied.

Conclusion

4. *Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim Huynh whose telephone number is (571)272-3635 or via e-mail addressed to [kim.huynh3@uspto.gov]. The examiner can normally be reached on M-F 9:00AM-6:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached at (571)272-3632 or via e-mail addressed to [mark.rinehart@uspto.gov].*

The fax phone numbers for the organization where this application or proceeding is assigned are (571)273-8300 for regular communications and After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-2100.

Kim Huynh
Patent Examiner
AU 2111

/Mark Rinehart/
Supervisory Patent Examiner, Art Unit 2111